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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,733	12/02/2003	Junzhong Liang	018158-022110US	6341

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EXAMINER

THOMAS, BRANDI N

ART UNIT	PAPER NUMBER
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2873

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/726,733

Applicant(s)

LIANG, JUNZHONG

Examiner

Brandi N. Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/14/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: Detailed Action.

DETAILED ACTION

Information Disclosure Statement

1. Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed 12/14/05. An initialed copy is attached to this Office Action.

Claim Rejections - 35 USC § 102

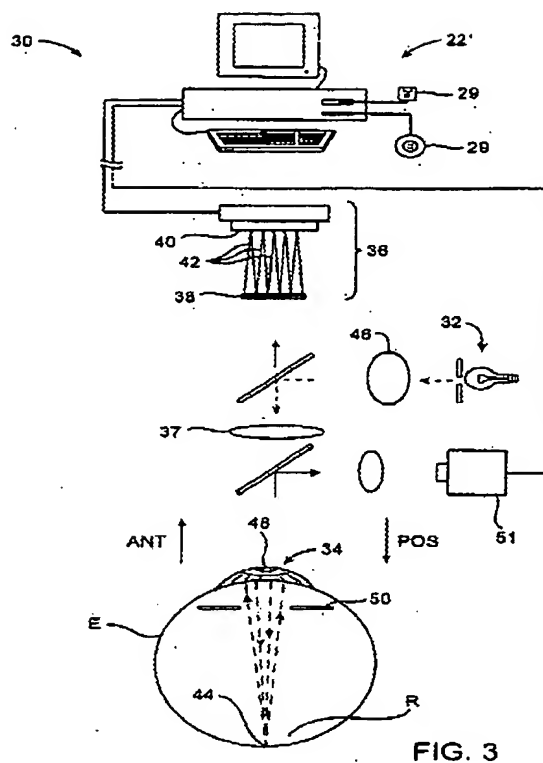
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-12, 15, and 17-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Dai et al. (2005/0270491 A1).

Regarding claim 1, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), the method comprising: measuring an optical error of the eye (section 0103); calculating at least one image quality parameter for a selected spatial frequency or range of spatial frequencies, based on the measured optical error of the eye (E) (section 0117); and forming a plan for refractive correction of the optical error, based on the calculated image quality parameter (section 0117).



Regarding claim 2, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein measuring (30) the optical error comprises measuring at least one wavefront aberration with a wavefront of light passing through the optical components of the eye, using a wavefront sensor (36) (section 0103).

Regarding claim 3, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein the wavefront aberration is measured with the pupil of the eye having a diameter of between about 4 mm and about 6 mm (section 0107).

Regarding claim 4, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein calculating at least one image quality parameter comprises calculating at least one modulation transfer function (section 0117).

Regarding claim 5, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein calculating at least one modulation transfer function comprises calculating a plurality of modulation transfer functions corresponding to a plurality of potential refractive corrections (section 0128-0132).

Regarding claim 6, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein forming a plan for refractive correction comprises selecting one of the potential refractive corrections, wherein the selected refractive correction corresponds to a highest modulation transfer function of the plurality of modulation functions, at the selected spatial frequency (section 0125).

Regarding claim 7, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein forming a plan for refractive correction comprises selecting one of the potential refractive corrections, wherein the selected refractive correction corresponds to a largest total volume modulation transfer function of the plurality of modulation functions, over the selected range of spatial frequencies (section 0126 and 0143).

Regarding claim 8, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein forming a plan for refractive correction comprises selecting one of the potential refractive corrections, wherein the selected refractive correction corresponds to a highest average modulation transfer function of the plurality of modulation functions, over the selected range of spatial frequencies (section 0131).

Regarding claim 9, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein calculating at least one image quality parameter comprises calculating at least one modified Strehl ratio (section 0117).

Regarding claim 10, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein calculating at least one modified Strehl ratio comprises calculating a plurality of modified Strehl ratios corresponding to a plurality of potential refractive corrections within the selected range of spatial frequencies comprising about 0 cycles/degree to about 60 cycles/degree (sections 0117 and 0131).

Regarding claim 11, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein forming a plan for refractive correction comprises selecting one of the potential refractive corrections, wherein the selected refractive correction corresponds to a highest modified Strehl ratio of the plurality of modified Strehl ratios (sections 0117 and 0043).

Regarding claim 12, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein the selected spatial frequency comprises about 30 cycles/degree (sections 0117 and 0125).

Regarding claim 15, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein the selected spatial frequency comprises about 60 cycles/degree (section 0117).

Regarding claim 17, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein the selected range of spatial frequencies comprises about 20 cycles/degree to about 60 cycles/degree (sections 0117, 0125, and 0131).

Regarding claim 18, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein the selected range of spatial frequencies comprises about 0 cycles/degree to about 80 cycles/degree (sections 0125 and 0137).

Regarding claim 19, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), wherein forming a plan for refractive correction comprises calculating an ablation pattern for a corneal tissue of the eye, based at least partly on the calculated image quality parameter (sections 0122-0134).

Regarding claim 20, Dai et al. discloses, in figures 3 and 3A, a method for determining a refractive correction for an eye (E), further comprising ablating the corneal tissue of the eye according to the ablation pattern (section 0125).

Regarding claim 21, Dai et al. discloses, in figures 3 and 3A, a system for determining a refractive correction for an eye (E), the system comprising: a sensor (30) for measuring an optical error of the eye (E) (section 0103); and a processor for generating a refractive correction pattern based at least in part on an image quality parameter for a selected spatial frequency or range of spatial frequencies, the image quality parameter being based on the optical error (section 0117).

Regarding claim 22, Dai et al. discloses, in figures 3 and 3A, a system for determining a refractive correction for an eye (E), wherein the sensor comprises a wavefront sensor (36) (section 0103).

Regarding claim 23, Dai et al. discloses, in figures 3 and 3A, a system for determining a refractive correction for an eye (E), wherein the image quality parameter comprises at least one modulation transfer function (section 0117).

Regarding claim 24, Dai et al. discloses, in figures 3 and 3A, a system for determining a refractive correction for an eye (E), wherein the image quality parameter comprises at least one modified Strehl ratio (section 0117).

Regarding claim 25, Dai et al. discloses, in figures 3 and 3A, a system for determining a refractive correction for an eye (E), wherein the modified Strehl ratio comprises a Strehl ratio limited to a range of spatial frequencies of between about 0 cycles/degree and about 60 cycles/degree (section 0117).

Regarding claim 26, Dai et al. discloses, in figures 3 and 3A, a system for determining a refractive correction for an eye (E), wherein the refractive correction pattern comprises an ablation pattern of laser energy for ablation of a corneal tissue of the eye so as to correct the measured optical error (section 0103).

Regarding claim 27, Dai et al. discloses, in figures 3 and 3A, a system for determining a refractive correction for an eye (E), the system further comprising a laser system for directing laser energy onto the corneal tissue of the eye to achieve the generated ablation pattern (sections 0103 and 0113).

Regarding claim 28, Dai et al. discloses, in figures 3 and 3A, a system for correcting an optical error of an eye, the system comprising: a sensor (30) for measuring the optical error of the eye (E) (section 0103); a processor for generating an ablation pattern of laser energy for ablation of a corneal tissue of the eye so as to correct the measured optical error, the ablation pattern based at least in part on an image quality parameter for a selected spatial frequency or range of spatial frequencies, the image quality parameter being based on the optical error (section 0117); and a laser system (32) for directing laser energy onto the corneal tissue of the eye (E) to achieve the generated ablation pattern (section 0103).

Regarding claim 29, Dai et al. discloses, in figures 3 and 3A, a device determining a refractive correction for an eye (E), the device comprising a software module for processing at

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least one measurement of the eye (E) to provide the refractive correction of the eye (E) (section 0207).

Regarding claim 30, Dai et al. discloses, in figures 3 and 3A, a device determining a refractive correction for an eye (E), wherein the at least one measurement comprises at least one wavefront measurement (36) (section 0103).

Regarding claim 31, Dai et al. discloses, in figures 3 and 3A, a device determining a refractive correction for an eye (E), wherein the software module calculates at least one modulation transfer function, based on the at least one measurement (section 0117).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dai et al. (2005/0270491 A1).

Regarding claims 13, 14, and 16, Dai discloses the claimed invention but does not specifically disclose wherein the selected spatial frequency comprises about 37.5 cycles/degree or comprises about 48 cycles/degree or comprises about 0 cycles/degree to about 60 cycles/degree. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention to include wherein the selected spatial frequency comprises about 37.5 cycles/degree or comprises about 48 cycles/degree or comprises about 0

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cycles/degree to about 60 cycles/degree, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (In re Boesch, 617 2d F.2d 272, 205 USPQ 215 (CCPA 1980)). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention to include wherein the selected spatial frequency comprises about 37.5 cycles/degree or comprises about 48 cycles/degree or comprises about 0 cycles/degree to about 60 cycles/degree for the purpose of the cycle per degree corresponds with vision, for example, 30 cycles/degree = 20/20 vision and 60 cycles/degree = 20/10 vision.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on Monday - Thursday from 6-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BNT

BNT

Brandi N Thomas
Examiner
Art Unit 2873

Alicia Harrington
ALICIA HARRINGTON
PRIMARY PATENT EXAMINER